COMPOSITE BASE FOR HVAC UNITS

Circular 16-1

Reference: 2001 Title 24, Part 2, CBC Sections 1632A
2001 Title 24, Part 1, Section 4-317(b)

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Discipline: Structural

This circular is intended for use by the DSA plan review engineers and field engineers to indicate an acceptable method for achieving compliance with applicable codes. Its purpose is to promote uniform statewide criteria for use in plan and construction review of projects within the jurisdiction of DSA. Other methods proposed by design professionals to solve a particular problem may be considered by DSA and reviewed for code compliance.

Purpose: The purpose of this circular is to clarify seismic anchorage requirements for HVAC units which use a composite base, in construction projects under DSA jurisdiction.

Background: HVAC units may be packaged with a base constructed of composite material (e.g. glass-mat reinforced thermal plastic). The composite base may serve three purposes: 1) as a base for the HVAC unit and mounting internal components such as compressors, 2) as a drain pan and 3) as a shipping pallet.

1. Requirements for All HVAC Units: These requirements are applicable for all HVAC units with composite bases:

1.1 The composite base must be assembled by the manufacturer and shipped as an integral part of the equipment.

1.2 The HVAC unit must be listed or certified by a qualified independent testing and certification agency such as Underwriters Laboratories (UL), Inc., or Intertek ELT Semko. The listing shall indicate that the composite base is suitable for exposure to ultra violet light, for immersion in water, and for use in exterior climatic conditions and operating temperatures.

Composite bases shall be rated for indoor air smoke and flame spread per UL94, Test 94-5V.

1.3 The curb or sleeper supporting the HVAC unit must be constructed to match or fit the composite base as recommended or supplied by the manufacturer.

2. HVAC Units Weighing Less than 400 Pounds: In addition to the requirements of Section 1 above, the HVAC unit must be anchored to resist wind or seismic forces per California Building Code (CBC) Chapter 16A, Divisions III and IV. However, such anchorage need not be detailed in the construction documents (Title 24, Part 1, Section 4-317(b)). HVAC anchorage details shall be provided by the manufacturer or its authorized representative to the project design professional and project inspector. An acceptable anchorage detail is shown on Appendix A and Appendix B.

3. HVAC Units Weighing 400 Pounds or More: In additions to the requirements of Section 2 above, the following shall also be applicable:

3.1 The project design professional specifies and approves its use.

3.2 A licensed design professional shall provide calculations to verify that wind or seismic forces do not cause overturning of the HVAC unit.

3.3 Details and calculations shall be provided by the design professional in general responsible charge for the project for transfer of wind and seismic loads between the HVAC unit and supporting structure. Screws or bolts embedded into the composite material shall not be considered effective to transfer wind or seismic loads. Lateral loads may be transferred through composite base by means of bearing clips or other connections that bear on the composite material.

3.4 If the HVAC unit with a composite base is mounted on a metal curb, the metal curb must be rated for gravity and lateral loads and detailed on the construction documents. If the metal curb has a valid OSHPD anchorage pre-approval, the OPA number and anchorage detailing must be shown on the construction documents.

APPENDICES

Appendix A – Photograph of unit showing Seismic Restraint Clips

Appendix B – Drawing showing attachment method for composite base to metal roof curb

Appendix A

Example of Seismic Anchorage

(Only for HVAC Units Weighing Less Than 400 LBS. See Section 3 above for Units Weighing 400 LBS or More)

Appendix B

Example of Seismic Anchorage

(Only for HVAC Units Weighing Less Than 400 LBS. See Section 3 above for Units Weighing 400 LBS or More)